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EXAMINER	
WYATT, KEVIN S	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/790,894	Applicant(s) O'NEILL ET AL.	
	Examiner Kevin Wyatt	Art Unit 2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 November 2008*.

2a)☒ This action is FINAL. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to the Amendment after non-final and remarks filed on 11/26/2008. Currently, claims 1-24 are pending.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-2, 8-14, 20-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Vock (U.S. Patent No. 6,320,173 B1).

Regarding claim 1, Vock shows in Fig. 6A-B a method for locating a position of a feature in a scene, comprising the steps of forming an image (120, 142e, 152 or 154) of the feature using a segmented array (132, 140 or 150) having a plurality of array subelements each having a linear dimension, wherein each of the array subelements has an output signal (col. 7, lines 33-40); and cooperatively analyzing (via onboard processor within the card, col. 3, lines 13-17) the output signals from at least two spatially adjacent array subelements (adjacent pixels) to establish a data set (frames of image data) reflective of an extent to which output signals responsive to the image of the feature (received by the frame grabber) are produced from exactly one or from more than one of the adjacent array subelements, and to reach a conclusion from the data set (frames of image data) as to a location of the image (performed during analyzing composite image, col. 3, lines 22-25) of the feature on the segmented array with an

accuracy of less than the linear dimension of an array subelements (at 200 yards in the IFOV of the golf ball, 1440 pixels will map 1 pixel per golf ball, 720 pixels will map ½ pixel per golf ball col. 3, lines 47-52, further accuracy maybe achieved using a combination of techniques such as $\Phi_{sensoroptics}$ and/or $E_{detector}$ calculations, summing signal strengths of adjacent detectors as suggested by Vock in col. 13, line 15) when the output signal is produced from more than one of the adjacent array subelements.

Regarding claim 2, Vock shows in Figs. 2, 4-6, a method wherein the step of forming includes the step of providing a sensor (40, i.e., solid state camera, 132, i.e., focal plane elements or 108, i.e., array of elements) including an optics system (42, 71,102 and 130) that forms the image of the feature of the scene at an image surface (focal plane), and the segmented array at the image surface upon which the image is formed.

Regarding claim 8, Vock shows in Figs. 4-6, a method wherein the step of providing a sensor includes the step of providing a two-dimensional segmented array (108, 140 or 150).

Regarding claim 9, Vock shows in Figs. 4-6, a method wherein the step of providing a sensor includes the step of providing a two-dimensional segmented array formed of a pattern of intersecting array subelements (108, 140 or 150).

Regarding claim 10, Vock discloses a method wherein the step of cooperatively analyzing includes the steps of determining whether output signals responsive to the image of the feature are produced in single ones or combinations of the intersecting array subelements, and identifying the location of the image of the feature responsive to

a distribution of the output signals from the step of determining whether output signals responsive to the image of the feature are produced in the intersecting array subelements (col. 3, 13-25 and col. 7, lines 33-40).

Regarding claim 11, Vock discloses a method wherein the step of cooperatively analyzing includes the steps of determining the relative strengths of the output signals responsive to the image of the feature that are produced in combinations of the intersecting array subelements, and identifying the location of the image of the feature responsive to the relative strengths of the output signals from the step of determining the relative strengths of the output signals responsive to the image of the feature that are produced in combinations of the intersecting array subelements (col. 12, lines 49-60 and col. 13, lines 1-6).

Regarding claim 12, Vock shows in Figs. 6A-B a method wherein the step of providing a sensor (140 or 150) includes the step of providing a two-dimensional segmented array formed of a pattern of square array subelements, wherein four of the square array subelements meet at an intersection point, and wherein the step of forming an image includes the step of forming the image having a diameter of one blur diameter (the slightly blurred image of 142a-e, 152 or 154).

Regarding claim 13, Vock discloses a method for locating a position of a feature in a scene, comprising the steps of forming an image of the feature using a segmented light-detector array having a plurality of light-detector subelements, wherein each of the light-detector subelements has an output signal (col. 3, 13-25 and col. 7, lines 33-40); and cooperatively analyzing (via onboard processor within the card, col. 3, lines 13-17)

the output signals from at least two spatially adjacent light-detector subelements to establish a data set (frames of image data) reflective of an extent to which output signals responsive to the image of the feature (received by the frame grabber) are produced from exactly one or from more than one of the adjacent light-detector subelements, and to reach a conclusion from the data set as to a location of the image (performed during analyzing composite image) of the feature on the segmented light-detector array (col. 3, 13-25 and col. 7, lines 33-40).

Regarding claim 14, Vock shows in Figs. 2, 4-6, a method wherein the step of forming includes the step of providing a sensor (40, i.e., solid state camera, 132, i.e., focal plane elements or 108, i.e., array of elements) including an optics system (42, 71,102 and 130) that forms the image of the feature of the scene at an image surface, and the segmented light-detector array at the image surface upon which the image is formed.

Regarding claim 20, Vock shows in Figs. 2, 4-6, wherein the step of providing a sensor includes the step of providing a two-dimensional segmented light-detector array.

Regarding claim 21, Vock shows in Figs. 2, 4-6, wherein the step of providing a sensor includes the step of providing a two-dimensional segmented light-detector array formed of a pattern of intersecting light-detector subelements.

Regarding claim 22, Vock discloses a method wherein the step of cooperatively analyzing includes the steps of determining whether output signals responsive to the image of the feature are produced in single ones or combinations of the intersecting light-detector subelements, and identifying the location of the image of the feature

responsive to a distribution of the output signals from the step of determining whether output signals responsive to the image of the feature are produced in the intersecting light-detector subelements (col. 3, 13-25 and col. 7, lines 33-40).

Regarding claim 23, Vock discloses a method wherein the step of cooperatively analyzing includes the steps of determining the relative strengths of the output signals responsive to the image of the feature that are produced in combinations of the intersecting light-detector subelements, and identifying the location of the image of the feature responsive to the relative strengths of the output signals from the step of determining the relative strengths of the output signals responsive to the image of the feature that are produced in combinations of the intersecting light-detector subelements (col. 12, lines 49-60 and col. 13, lines 1-6).

Regarding claim 24, Vock shows in Figs. 6A-B a method for locating a position of a feature in a scene, comprising the steps of forming an image (120, 142e, 152 or 154) having a diameter of about one blur diameter (the slightly blurred image of 142a-e, 152 or 154) of the feature using a two-dimensional segmented array (132, 140 or 150) having a plurality of square array subelements, wherein four of the square array subelements meet at an intersection point, and wherein each of the array subelements has an output signal (col. 7, lines 33-40); and cooperatively analyzing (via onboard processor within the card, col. 3, lines 13-17) the output signals from at least two spatially adjacent array subelements to establish a data set (frames of image data) reflective of an extent to which output signals responsive to the image of the feature are produced from exactly one or from more than one of the adjacent array subelements,

and to reach a conclusion from the data set as to a location of the image of the feature on the segmented array (col. 3, 13-25 and col. 7, lines 33-40).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-6, and 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Perregaux (U.S. Patent No. 6,654,056 B1) in view of Ang (U.S. Patent No. 6,507,011 B2).

Regarding claim 1, Perregaux discloses, a method for locating a position of a feature in a scene (document), comprising the steps of forming an image of the feature using a segmented array (10, i.e., photosensitive chip) having a plurality of array subelements (100, i.e., photosite), each having a linear dimension wherein each of the array subelements has an output signal. Perregaux does not explicitly disclose cooperatively analyzing the output signals from at least two spatially adjacent array subelements to establish a data set reflective of an extent to which output signals responsive to the image of the feature are produced from exactly one or from more than one of the adjacent array subelements and to reach a conclusion from the data set as to a location of the image of the feature on the segmented array with an accuracy of less than the linear dimension of an array subelement when the output signal is produced from one or more than one of the adjacent array subelements. However, determining

feature locations and cooperatively analyzing adjacent array subelements, for document generation or document reproduction devices such as digital scanners, copiers and facsimile machines would be routinely performed by any appropriate software or microprocessing function within the device in order to convert and place the detected signals in the proper location in the device's memory. For example, the microprocessing functions performed by the "CMOS active pixel color linear image sensor" in Fig. 3 of Ang (U.S. Patent No. 6,507,011 B2) such as line control/readout logic circuit (320), line store select logic (330), timing control circuit (370) and analog mux (350). It would have been obvious to one skilled in the art to provide a device capable of cooperatively analyzing adjacent array subelements and determining feature locations for the purpose of reconstructing (from memory) the imaged feature for image reproduction.

Regarding claim 13, Perregaux discloses a method for locating a position of a feature in a scene (document), comprising the steps of forming an image of the feature using a segmented light-detector array (10, i.e., photosensitive chip) having a plurality of light-detector subelements (100, i.e., photosite) each having a linear dimension, wherein each of the light-detector subelements has an output signal; and cooperatively analyzing the output signals from at least two spatially adjacent light-detector subelements to establish a data set reflective of an extent to which output signals responsive to the image of the feature are produced from exactly one or from more than one of the adjacent light-detector subelements, and to reach a conclusion from the data set as to a location of the image of the feature on the segmented light-detector array with an accuracy of less than the linear dimension of an array subelement when the

output signal is produced from one or more than one of the adjacent array subelements However, determining feature locations and cooperatively analyzing adjacent array subelements, for document generation or document reproduction devices such as digital scanners, copiers and facsimile machines would be routinely performed by any appropriate software or microprocessing function within the device in order to convert and place the detected signals in the proper location in the device's memory. For example, the microprocessing functions performed by the "CMOS active pixel color linear image sensor" in Fig. 3 of Ang (U.S. Patent No. 6,507,011 B2) such as line control/readout logic circuit (320), line store select logic (330), timing control circuit (370) and analog mux (350). It would have been obvious to one skilled in the art to provide a device capable of cooperatively analyzing adjacent array subelements and determining feature locations for the purpose of reconstructing (from memory) the imaged feature for image reproduction.

Regarding claim 2, Perregaux further discloses, the step of forming includes the step of providing a sensor including an optics system (located within the raster input scanner (RIS)) that forms the image of the feature of the scene (document) at an image surface, and the segmented array at the image surface upon which the image is formed (col. 14, lines 5-7).

Regarding claims 3, Perregaux further shows in Fig. 4 the step of providing a sensor (10, i.e., photosensitive chip) includes the step of providing a one-dimensional segmented array formed of pairs of two adjacent array subelements (100, i.e., photosites).

Regarding claim 4, Perregaux further discloses the step of cooperatively analyzing includes the steps of determining whether output signals responsive to the image of the feature are produced by one or both of the two adjacent array subelements (the function of the raster input scanner (RIS), col. 14, lines 9-11), and identifying the location of the image of the feature (document) responsive to the step of determining whether output signals responsive to the feature are produced by one or both of the two adjacent array subelements (col. 14, lines 9-11) (col. 14, lines 28-36).

Regarding claim 5, Perregaux further discloses the step of cooperatively analyzing includes the steps of determining relative strengths of output signals responsive to the feature produced by the two adjacent array subelements, and identifying the location of the image of the feature responsive to the step of determining relative strengths of output signals responsive to the feature (col. 14, lines 28-36).

Regarding claim 6, Perregaux further shows in Fig. 4, the step of providing a sensor includes the step of providing a one-dimensional segmented array having spatially overlapping array subelements.

Regarding claim 14, Perregaux further discloses the step of forming includes the step of providing a sensor including an optics system that forms the image of the feature of the scene at an image surface, and the segmented light-detector array at the image surface upon which the image is formed.

Regarding claim 15, Perregaux further shows in Fig. 4 the step of providing a sensor includes the step of providing a one-dimensional segmented light-detector array formed of pairs of two adjacent light-detector subelements.

Regarding claim 16, Perregaux discloses wherein the step of cooperatively analyzing includes the steps of determining whether output signals responsive to the image of the feature are produced by one or both of the two adjacent light-detector subelements (the function of the raster input scanner (RIS), col. 14, lines 9-11), and identifying the location of the image of the feature responsive to the step of determining whether output signals responsive to the feature are produced by one or both of the two adjacent light-detector subelements (col. 14, lines 9-11) (col. 14, lines 28-36).

Regarding claim 17, the step of cooperatively analyzing includes the steps of determining relative strengths of output signals responsive to the feature produced by the two adjacent light-detector subelements, and identifying the location of the image of the feature responsive to the step of determining relative strengths of output signals responsive to the feature (col. 14, lines 28-36).

Regarding claim 18, Perregaux shows in Fig. 4 the step of providing a sensor includes the step of providing a one-dimensional segmented light-detector array having spatially overlapping light-detector subelements.

6. Claims 1-2, 7, 13 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hou (U.S. Patent No. 6,596,979 B2) in view of Ang (U.S. Patent No. 6,507,011 B2).

Regarding claim 1, Hou shows in Figs. 2A-2B, 3 and 10, a method for locating a position of a feature in a scene, comprising the steps of forming an image of the feature using a segmented array having a plurality of array subelements, wherein each of the array subelements has an output signal (col. 5, lines 27-35). Hou does not explicitly

disclose cooperatively analyzing the output signals from at least two spatially adjacent array subelements to establish a data set reflective of an extent to which output signals responsive to the image of the feature are produced from exactly one or from more than one of the adjacent array subelements each having a linear dimension, and to reach a conclusion from the data set as to a location of the image of the feature on the segmented array with an accuracy of less than the linear dimension of an array subelement when the output signal is produced from one or more than one of the adjacent array subelements. However, determining feature locations and cooperatively analyzing adjacent array subelements, for document generation or document reproduction devices such as digital scanners, copiers and facsimile machines would be routinely performed by any appropriate software or microprocessing function within the device in order to convert and place the detected signals in the proper location in the device's memory. For example, the microprocessing functions performed by the "CMOS active pixel color linear image sensor" in Fig. 3 of Ang (U.S. Patent No. 6,507,011 B2) such as line control/readout logic circuit (320), line store select logic (330), timing control circuit (370) and analog mux (350).. It would have been obvious to one skilled in the art to provide a device capable of cooperatively analyzing adjacent array subelements and determining feature locations for the purpose of reconstructing (from memory) the imaged feature for image reproduction.

Regarding claim 2, Hou shows in Figs. 2A-2B, 3 and 10, the step of forming includes the step of providing a sensor including an optics system (208, i.e., rod lens array or 274, i.e., optical lens) that forms the image of the feature of the scene at an

image surface (250, i.e., photodetector array or 276, i.e., image sensor), and the segmented array at the image surface upon which the image is formed.

Regarding claim 7, Hou shows in Fig. 10, the step of providing a sensor includes the step of providing a one-dimensional segmented array (performs the function of a one-dimensional array) having non-spatially overlapping array subelements.

Regarding claim 13, Hou shows in Fig. 10, a method for locating a position of a feature in a scene, comprising the steps of forming an image of the feature using a segmented light-detector array having a plurality of light-detector subelements each having a linear dimension, wherein each of the light-detector subelements has an output signal (col. 5, lines 27-35). Hou does not explicitly disclose cooperatively analyzing the output signals from at least two spatially adjacent light-detector subelements to establish a data set reflective of an extent to which output signals responsive to the image of the feature are produced from exactly one or from more than one of the adjacent light-detector subelements, and to reach a conclusion from the data set as to a location, of the image of the feature on the segmented light-detector array with an accuracy of less than the linear dimension when the, output signal is produced from more than one of the adjacent array subelements. However, determining feature locations and cooperatively analyzing adjacent array subelements, for document generation or document reproduction devices such as digital scanners, copiers and facsimile machines would be routinely performed by any appropriate software or microprocessing function within the device in order to convert and place the detected signals in the proper location in the device's memory. For example, the microprocessing

functions performed by the "CMOS active pixel color linear image sensor" in Fig. 3 of Ang (U.S. Patent No. 6,507,011 B2) such as line control/readout logic circuit (320), line store select logic (330), timing control circuit (370) and analog mux (350). It would have been obvious to one skilled in the art to provide a device capable of cooperatively analyzing adjacent array subelements and determining feature locations for the purpose of reconstructing (from memory) the imaged feature for image reproduction.

Regarding claim 19, Hou shows in Fig. 10, the step of providing a sensor includes the step of providing a one-dimensional segmented light-detector array having non-spatially overlapping light-detector subelements.

Response to Arguments

7. Applicant's arguments filed 11/26/2008 have been fully considered but they are not persuasive.

In response to applicant's arguments regarding claim 1, that the relied-upon portions of the Vock patent appearing at Column 7, lines 33-40 and Column 3, lines 13-25 simply do not describe operations with sufficient particularity to determine whether the claimed operations are performed, the examiner disagrees, the examiner has attempted to further clarify the previously cited limitations disclosed in Vock which reasonably anticipate the recited limitations of claim 1.

In response to applicant's that Vock shows no appreciation for Applicants' invention as claimed and teaches a different method as apparent from col. 10, lines 9-45, the examiner submits that Vock's example in col. 3, lines 25-48 which maps the size of a golf ball to one pixel at a pre-selected distance of 200 yards discloses the solution

to what applicant cites in col. 10, lines 40-46 in Vock.

In response to applicant's arguments regarding the non-specific portions relied upon by the examiner on pages 14-15 of applicant's remarks, applicant inadvertently cites on page 14, lines 21-22, one technique of how Vock deals with the special condition where the image of the golf ball crosses over to two pixels, "a combination of the above techniques can be used" such as $\Phi_{sensoroptics}$ and/or $E_{detector}$ calculations, summing signal strengths of adjacent detectors cited in col. 13, line 15.

In response to applicant's arguments that Ang is not seen to remedy the deficiencies of Perregaux and Hou patents, the examiner disagrees. The Ang reference is provided as evidence to illustrate that "determining imaged feature locations and cooperatively analyzing adjacent array subelements" are functions that would be routinely performed by the microprocessor circuitry and memory.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Putnam (U.S. Patent No. 6,252,996 B1) discloses systems and methods for image conversion useful in the transformation of photographic pictures into templates for painting.

Takayama (U.S. Patent No. 5,956,087) discloses a linear image sensor.

9. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Wyatt whose telephone number is (571)-272-5974. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on (571)-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Thanh X Luu/
Primary Examiner, Art Unit 2878

/Kevin Wyatt/
Examiner, Art Unit 2878